

# White paper

April 2008

## W380

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Feel music, see music, hear music



Sony Ericsson

# Preface

## Purpose of this document

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This White paper will be published in several revisions as the phone is developed. Therefore, some of the headings and tables below contain limited information. Additional information and facts will be forthcoming in later revisions.

The aim of this White paper is to give the reader an understanding of technology used in the phone and its main applications, as well as the main functions and features of the phone.

**Note:** This document contains general descriptions for this specific Sony Ericsson mobile phone.

People who can benefit from this document include:

- Operators
- Service providers
- Software developers
- Support engineers
- Application developers
- Market units and sales people

This White paper is published by:

Sony Ericsson Mobile Communications AB,  
SE-221 88 Lund, Sweden

Phone: +46 46 19 40 00

Fax: +46 46 19 41 00

[www.sonyericsson.com/](http://www.sonyericsson.com/)

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# Sony Ericsson Developer World

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On [www.sonyericsson.com/developer](http://www.sonyericsson.com/developer), developers will find documentation and tools such as phone White papers, Developers guidelines for different technologies, SDKs and relevant APIs. The Web site also contains discussion forums monitored by the Sony Ericsson Developer Support team, an extensive Knowledge Base, Tips & Tricks, example code and news.

Sony Ericsson also offers technical support services to professional developers. For more information about these professional services, visit the Sony Ericsson Developer World Web site.

## Document history

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### Change history

2008-04-14	Version 9	Ninth revision
2008-02-21	Version 8	Eight revision
2008-02-18	Version 7	Seventh revision
2008-01-31	Version 6	Sixth revision
2008-01-23	Version 5	Fifth revision
2008-01-17	Version 4	Fourth revision
2007-12-21	Version 3	Third revision
2007-11-09	Version 2	Second revision
2007-11-06	Version 1	First revision

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# Product overview

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W380 is a rich Walkman® experience in a slim clamshell phone. Its balanced proportions, vivid accent colours and illuminated touch music keys brings the product to life.

Gesture control provides quick and easy control of the phone without having to touch it. The user simply silences a call or snoozes the alarm by sweeping the hand back and forth across the camera. The hidden display offers at-a-glance status of phone calls, messages and time.

The full Walkman® offering includes a Walkman® 2.0 player, a 512 MB memory card, TrackID™, PlayNow™ and a full Walkman® kit. The state of the art Walkman® player enables instant and easy access to favourite tracks. The music experience can be enhanced by using the FM radio with RDS. With PlayNow™, music and games can be previewed before purchase and download. With the music keys on the front the user can easily control the music when the phone is closed.

The excellent 1.3 megapixel camera is easy to access. The user smoothly takes pictures, views or shares them. With the large picture album it is possible to save up to 270 photos with the supplied memory card inserted. Copy music from a CD to the phone using the Media Manager software that is included in the phone box. Content such as pictures, music, ringtones, themes, games and video clips can be saved on the memory card.

To enhance the gaming experience, Java™ games are already pre-loaded in the phone, for example, SIMS 2. Polyphonic ringtones with 24 voices, and up to 14 MB user-free memory for storage of phone content. Your phone comes ready to run with settings installed.

Photos, articles and other graphical elements in the Web browser are adapted to fit the large 176x220 pixels LCD (Liquid Crystal Display) colour screen. RSS feeds are included to keep the user updated on news and information at any time.

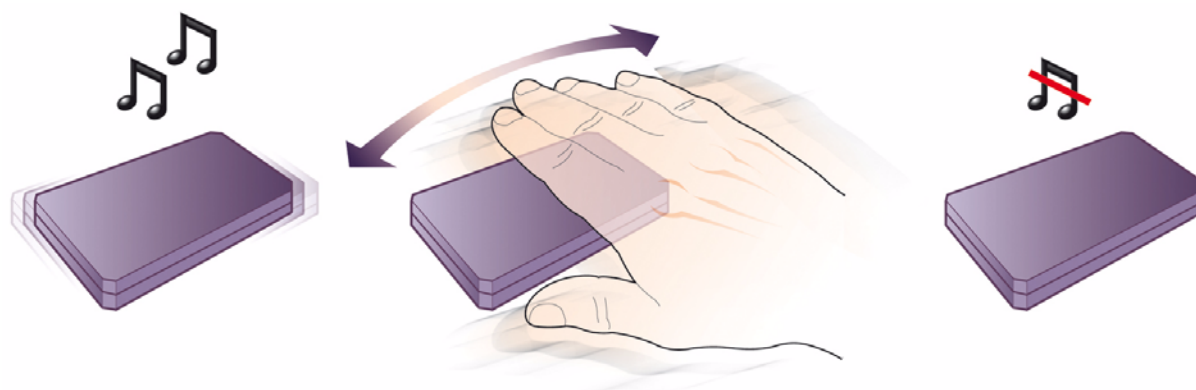
Note: To provide continuously updated information about the implemented technology and functionality of this product, this White paper will be released in updated revisions.

# Key features

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## Gesture control

Gesture control lets you control the phone without opening or touching it. You can silence a call or snooze the alarm by sweeping your hand back and forth in front of the camera, since the lens is used as a sensor to register movement. Gesture control is easily switched on or off in the Settings menu.



## Music keys

With the music keys on the front of the phone, the user can control the Walkman® player when the phone is closed. The music keys are protected by a key lock. The key lock prevents accidental activation of music, for example, when the phone is kept in a pocket. The music keys and their functions are:

-  Play or stop the music.
-  Fast forward or move between tracks.
-  Rewind or move between tracks.

## Walkman® player 2.0

The Walkman® player converts the phone into a portable music player that supports AAC, AAC+, eAAC, MP3, 3GP, M4A, MIDI, AMR-WB, AMR-NB and WAV audio formats. The Walkman® shortcut gives you direct access to your music files without having to browse the menus.

## Music recognition - TrackID™

Obtain title, artist and album information about songs you hear and like, for example, on the radio or when recording music from an external source. TrackID™ is not available in all countries.

## FM Radio

The FM radio with RDS (Radio Data System) offers instant and easy access to FM radio channels. The RDS function brings information directly to the screen, which is sent out by the currently tuned in radio station. Plug in the portable handsfree that works as an antenna and start listening to the radio. The radio can also be used as an alarm signal.

### **Memory Stick Micro™ (M2™)**

A 512 MB memory card is included in the box. Different kinds of content (pictures, audio, video clips and so on) can be saved on the memory card and transferred to other memory card compatible products, such as Sony™ digital cameras, video cameras, portable music players, TVs, photo printers and computers.

### **External hidden display**

W380 has an external OLED (Organic Light-Emitting Diode) display which is shown when the phone is activated. The display shows music information with artist, track title and music keys actions. It also shows information such as incoming calls, alarms, messages, time, network access and battery level.

### **USB 2.0 mass storage**

When connecting the phone to a computer using the provided USB cable, the memory card appears on the computer screen as a removable disk together with other computer disks. You can then quickly and easily drag and drop, for example, music and image files between folders in the phone and the computer.

### **1.3 megapixel camera**

With the 1.3 MP camera which includes 4x digital zoom, taking pictures becomes easy and fun. Taking a picture and sending it as part of a picture message is just a few clicks away.

### **Colour screen**

The 1.9" TFT 176x220 LCD colour screen provides excellent viewing and facilitates high-quality entertainment.

### **MMS (Multimedia Messaging Service)**

Say it in words, say it with pictures, animate it, add sound. Have fun putting together multimedia birthday and holiday greetings. Sony Ericsson has incorporated the latest messaging standard, along with a colour display for an enhanced imaging experience.

### **Push email**

W380 supports push email, a method of pushing new email messages automatically to mobile devices. Push email gives a high usability to mobile email, with email being delivered in the background (similar to SMS/MMS).

### **RSS Reader**

A built-in RSS (Really Simple Syndication) reader is used in combination with the Internet browser. When browsing, frequently updated content, such as news headlines and content from selected Web sites and blogs, can be received as feeds using the Internet.

### **Mobile blogging**

Send pictures, that you want to show to friends and family, using the Internet to your personal blog.

### **Picture phonebook**

W380 lets you assign a picture or an icon saved in the phone to an entry in the Phonebook. When that person calls, a picture or an icon of your choice is shown in the display as well as the name.

## **Bluetooth™ wireless technology**

Several devices can be connected up to 10 metres (33 feet) away using Bluetooth wireless technology. For example, when it rings, the phone can be answered with a Bluetooth headset, and images can be sent to another phone at the same time. The phone and a computer can exchange data such as images, vCards and calendar data. Bluetooth version 2.0 with streaming stereo music, A2DP (Advanced Audio Distribution Profile) is supported.

## **My friends**

To ensure interoperability of mobile instant messaging and presence services, Sony Ericsson, Ericsson, Motorola and Nokia have created the Wireless Village™ Solution, an open standard. The protocol is bearer-independent and can be implemented in different networks. The Wireless Village Instant Messaging and Presence Service (IMPS) includes three primary features: Presence information of other Wireless Village users, Instant messaging “point-to-point messaging” between Wireless Village users and Groups where users join a chatroom with other participants.

## **MusicDJ™**

A sampler music tool with midi drum, guitar, keyboard, bass and brass loops in different music styles which can be combined to create polyphonic ringtones.

## **PlayNow™**

A unique direct link to download content, such as games, themes and images, which is easy to use and gives you best-selling content for mobile download. All formats that are supported in the phone will be possible to download. Content may be previewed before purchase.

## **HTML Web browser support**

Browse the Internet and look at the Web sites in a different way with Access NetFront™ 3.3, an HTML browser which supports a complete Web standard suite.

## **WAP 2.0 XHTML MP 1.1**

A mobile Internet standard enabling you to access specially designed Web sites. WAP 2.0 supports colour and interactive lists.

## **Java™**

Additional Java applications gives users a chance to personalize the functions in their phones, and developers the opportunity to create new applications.

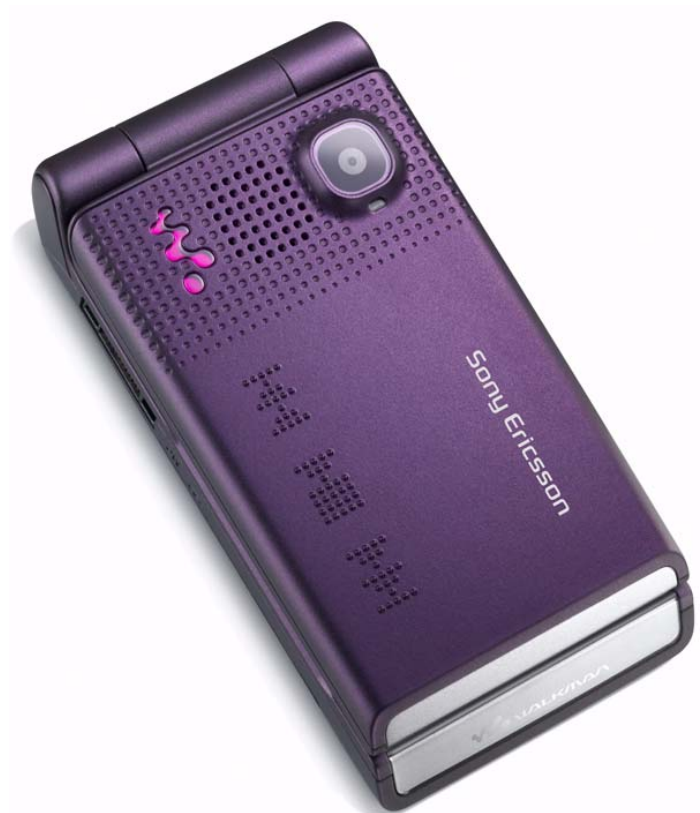
## **3D Gaming**

Gaming is a popular feature in mobile phones, and with Java, users can download new games and skill levels to further enhance their entertainment experience. Games are included in the phone at purchase, for example, SIMS 2.



# Images

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# Technologies in detail

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This chapter includes short descriptions of the technologies available in this product compared to two other Sony Ericsson products.

# Functions and features

The following includes short descriptions of the technologies available in W380 compared to Z310 and W610.

Feature	W380	Z310	W610
<b>3D games</b>	Yes	No	Yes
<b>Activity menu</b>  The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks	Yes	Yes	Yes
<b>Alarm clock</b>  Set a time for simple or recurring weekly alarms	Yes	Yes	Yes
<b>Antenna</b>  Built-in	Yes	Yes	Yes
<b>Backlight</b>  White backlight to illuminate the keypad and phone screen	Yes	Yes	Yes
<b>Battery</b>	3.6V, 920 mAh, Lithium Polymer	3.6V, 780 mAh, Lithium Polymer	3.6V, 900 mAh, Lithium Polymer
<b>Battery charging time</b>	At least 90% charged within 2 hours. Fully charged within 2.5 hours	At least 90% charged within 2 hours. Fully charged within 2.5 hours	At least 90% charged within 2 hours. Fully charged within 2.5 hours
<b>Bluetooth wireless technology</b>  Wireless connectivity between devices. Range - up to 10 metres. Support for specification of Bluetooth wireless technology, version 2.0	Yes	Yes	Yes
<b>Business card exchange</b>  Exchange contact information	Yes	Yes	Yes
<b>Calculator</b>	Yes	Yes	Yes
<b>Calendar</b>  Calendar with day, week and month views and reminders	Yes	Yes	Yes

Feature	W380	Z310	W610
<b>Call list</b>  View calls made and received	Yes	Yes	Yes
<b>Camera</b>  1.3 megapixel	1.3 megapixel	VGA	2.0 megapixel
<b>Camera album</b>  Folder where all camera pictures are saved in the phone	Yes	Yes	Yes
<b>Camera file browser</b>  Browse the picture folder without leaving the camera function	Yes	Yes	Yes
<b>Chinese input method</b>  Text input methods based on Simplified or Traditional Chinese: Bopomofo, Pinyin or Stroke	Yes	Yes	Yes
<b>Camera shortcut</b>  Dedicated camera activation. Press once and the integrated camera activates	No	No	Yes, camera key
<b>Clock</b>  On-screen clock that keeps the time even when the phone is off	Yes	Yes	No
<b>Co-branding area</b>  Operator key (Activity menu key and Internet key)	43,1 x 6,2 mm	25 x 7,2 mm	22 x 6,5
<b>Code memo</b>  A safe place to save all PIN codes and other information. To access Code memo, only one PIN code is needed	Yes	Yes	Yes
<b>Colour</b>  Electric purple, magnetic grey	Electric purple, magnetic grey	Black, copper, pink	Orange, black, silver
<b>Contacts</b>  Phonebook with fields for name, number, email address, Web address, picture, ringtone, title, address info, personal info and birthday	Yes	Yes	Yes
<b>Conference calls</b>  Support for multiparty calling	Yes	Yes	Yes

Feature	W380	Z310	W610
<b>Content online</b>  Downloadable pictures, games, themes, ringtones available online	Yes	Yes	Yes
<b>Copyright protection - DRM</b>  DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, entertainment features such as games, Java applications and so on)	Yes. OMA DRM 2.0	Yes. OMA DRM 1.0	Yes
<b>Design</b>	Clamshell	Clamshell	Stick
<b>Device Management (DM)</b>  DM utilizes GPRS as bearer (basic network connectivity needs to be in place) of the provisioning data and allows the operator to access the phone and check and set different settings such as network connectivity (GPRS), email, MMS, WAP and Java	Yes	Yes	Yes
<b>Digital zoom</b>	Up to 4x	No	Up to 2,25x for pictures Up to 4x for video clips
<b>Display (external)</b>  Type:  Resolution:	Yes  Monochrome OLED 128x36 pixels	Yes  Monochrome 96x64 pixels	No
<b>EDGE – eGPRS</b>  Enhanced General Packet Radio Service – a communications standard enabling packet data transfer of 59.2 Kbps per time slot.	Yes	Yes	No
<b>Email</b>  Built-in email client with inbox, outbox, compose/send and other functions	Yes	Yes	Yes
<b>EMS (Enhanced messaging)</b>  Text messaging (SMS) with pictures and sounds	Yes	Yes	Yes

Feature	W380	Z310	W610
<b>Exterior description</b>			
Size mm (length x width x thickness)	92 x 49 x 16	87 x 46,1 x 24,7	102 x 46 x 14
<b>Fast port</b>  A system connector which enables faster data transfer between the phone and a computer	Yes	Yes	Yes
<b>File manager</b>  Folder structure storage to help save and organize pictures, sounds and other phone content	Yes	Yes	Yes
<b>Flight mode</b>  All phone radio transmitters and receivers are inactivated. This phone starts with only certain functions available such as the calendar, music player or a game. The phone may then be used in some prohibited areas, such as aeroplanes or hospitals, where full mobile phone functionality is not allowed	Yes	No	Yes
<b>FM radio with RDS</b>  FM radio with presets, auto and manual search. Portable handsfree is used as an antenna. The radio can also be used as an alarm signal	Yes	No	Yes
<b>Games download</b>  Games can be downloaded and installed	Yes	Yes	Yes
<b>Games pre-loaded</b>	Yes	Yes	Yes
<b>Gesture control</b>  Silence an incoming call or set the alarm to snooze by sweeping your hand back and forth in front of the camera	Yes	No	No
<b>GPRS/EDGE</b>  General Packet Radio Services – a communications standard enabling packet data transfer similar to Internet. It is recommended that you have GPRS to use MMS and content download services	Yes Multislot class 10 supported (4+2)	Yes Multislot class 8 supported (4+1)	Yes Multislot class 10 supported (4+2)

Feature	W380	Z310	W610
<b>Hidden display</b>  The external display with a mirror effect lights up and shows information about new events	Yes	Yes	No
<b>HTML</b>  HyperText Markup Language, the standard Internet communications protocol	Yes	Yes	Yes
<b>Icon Desktop 12</b>  A graphic icon desktop with 12 interactive icons	Yes	Yes	Yes
<b>Instant messaging (Wireless Village/My friends)</b>  Chat – several people can take part in a mobile messaging session	Yes	Yes	Yes
<b>Internet blogging</b>  Share pictures over the Internet on your personal Web page	Yes	Yes	Yes
<b>Internet browser</b>	Yes	Yes	Yes
<b>Internet security</b>  Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping	Yes	Yes	Yes
<b>Java</b>  Support for Java J2ME™ technology	Java 2, Micro Edition (J2ME™), Java 3D™	Java 2, Micro Edition (J2ME™)	Java 2, Micro Edition (J2ME™), Java 3D™

Feature	W380	Z310	W610
<b>Keys</b>	Keypad with 12 alphanumeric keys  4+1 way navigation key  2 selection keys  Back  C key  On/off  Volume  Activity menu key/ Operator key  Walkman® shortcut  Music Play/Pause/ Fast Forward/ Back/Next/ Previous (touch keys)  Internet key/ Operator key  Music key lock	Keypad with 12 alphanumeric keys  4+1 way navigation key  2 selection keys  Back  C key  On/off  Volume  Activity menu key/ Operator key	Keypad with 12 alphanumeric keys  4+1 way navigation key  2 selection keys  Back  C key  On/off  Volume/camera zoom  Activity menu key/ Operator key  Walkman® key  Keylock  Camera key (side)  Multimedia (play/ stop)
<b>Lunar calendar</b>  A calendar system used in China and other parts of Asia. A lunar month is determined by the period required for the moon to complete its full cycle of 29.5 days	Yes	Yes	Yes
<b>Macromedia™ Flash Lite™</b>  For impressive animated wallpapers, menus and other graphic elements	Yes	No	No
<b>Mega Bass™</b>  An audio feature which enhances bass frequencies for better overall music experience	Yes	No	Yes



Feature	W380	Z310	W610
<b>Memory (built-in)</b>  Phone memory that is free to use (depending on software configuration/file content)	Up to 14 MB	Up to 14 MB	Up to 64 MB
<b>Memory card (included)</b>  Separate memory card for storing of pictures, audio, video clips and so on	Up to 512 MB on Memory Stick Micro™ (M2™)	No	Up to 512 MB on Memory Stick Micro™ (M2™)
<b>Memory Stick Micro™ (M2™) slot</b>  Slot for inserting a mini peripheral storage device (up to 2 GB). Compatible with many cameras, computers and other devices	Yes	No	Yes
<b>Menu shortcuts</b>  It is possible to dedicate shortcuts to the most-used phone functions	Yes	Yes	Yes
<b>MMS (Multimedia Messaging Service)</b>  Picture messaging with text and sound	Yes	Yes	Yes
<b>Modem</b>  Packet Switched Internet dial-up support	Yes	Yes	Yes
<b>MusicDJ™</b>  A sampler music tool with MIDI drum, guitar, keyboard, bass and brass loops in different music styles, which can be combined to create polyphonic ringtones	Yes	No	Yes
<b>Music key lock</b>  A key lock to lock the music keys	Yes	No	No
<b>Music keys</b>  The user can control the music with the touch keys; Play/Pause/Fast Forward/Back/Next and Previous on the front. The music keys has individual lighting and are supported with vibration and key tones	Yes	No	No
<b>My friends</b>  See Instant messaging	Yes	Yes	Yes

Feature	W380	Z310	W610
<b>Networks</b>	EDGE 850/1800/ 1900	GSM (R99) 900/ 1800/1900	GSM 850, (R99) 900, 1800, 1900, e-GSM 900
	EDGE 900/1800/ 1900.	GSM (R99) 850/ 1800/1900	
<b>OMA Data Synchronization (SyncML™)</b>	Yes	Yes	Yes
A device communications standard that enables remote synchronization between devices	SyncML 1.1 SyncML 1.2	SyncML 1.1 SyncML 1.2	SyncML 1.1 SyncML 1.2
<b>Operator key</b>	Yes	Yes	No
The Activity menu key and Internet key can be customized			
<b>OTA settings</b>	Yes	Yes	Yes
Internet, email and picture message settings can be sent over the air to the phone			
<b>Picture phonebook</b>	Yes	Yes	Yes
Add a picture to a saved contact. The picture appears on the screen when the saved contact calls			
<b>PlayNow™ (direct link)</b>	Yes	Yes	Yes
Listen to music before you purchase and download it to your phone			
<b>Polyphonic ringtones</b>	24	24	72
<b>Predictive text input</b>	Yes	Yes	Yes
When you write text, predictive text input software predicts the word you write and finishes it for you. The prediction is based on previous words used and a customizable dictionary			
<b>Push email</b>	Yes	Yes	Yes
A method of pushing new email messages automatically to mobile devices where email is delivered in the background			
<b>RSS Feeds</b>	Yes	Yes	Yes
Use your phone to view up-to-the-minute news and other content from selected Web sites and blogs			

Feature	W380	Z310	W610
<b>SAIC support</b>  SAIC (Single Antenna Interference Cancellation) makes mobile station receivers substantially more robust against interference and results in fewer dropped calls.	Yes	No	No
<b>Screen (internal)</b>  Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:	Full graphical 1.9 inches 176x220 pixels TFT colour LCD 262,000 White	Full graphical 1.8 inches 128x160 pixels CSTN 65,000 White	Full graphical 1.96 inches 176x220 pixels TFD, QCIF + alpha 262,000 White
<b>Screen saver</b>  When the phone has not been used for a while, a screen saver activates and the phone goes into 'sleep mode'	Yes	Yes	Yes
<b>Settings download (Ready to run)</b>  Set up functions, such as the Internet browser and picture messaging, that require a connection to the Internet. This function runs in the setup wizard or can be chosen in the Settings menu. This function is not included in the setup wizard for customized phones.	Yes	Yes	Yes
<b>SIM card lock</b>  The possibility to protect the SIM card with a four-digit PIN code	Yes	Yes	Yes
<b>Sleep mode</b>  A power-saving feature that minimizes battery power consumed when the phone is in standby	Yes	Yes	Yes
<b>SMS (Text messaging)</b>  SMS text messaging for long messages	Yes	Yes	Yes
<b>Sony Ericsson Remote Update Service</b>  Download the latest operator-approved version of the mobile phone software over the air	Yes	Yes	Yes

Feature	W380	Z310	W610
<b>Sony Ericsson Update Service</b>  Connect the phone to an Internet-connected computer, download the latest operator-approved software from the Web, <a href="http://www.sonyericsson.com/support">www.sonyericsson.com/support</a> and update the phone	Yes	Yes	Yes
<b>Sound recorder</b>  A recording device in the phone that can record voice messages or other sounds	Yes	Yes	Yes
<b>Speakerphone</b>  Loudspeaker suitable for using the phone as an office handsfree	Yes	Yes	Yes
<b>Speed dialling</b>  Allocate contacts in the phone book to specific keys on the keypad	Yes	Yes	Yes
<b>Standby time</b>	Up to 360 hours	Up to 300 hours	Up to 350 hours
<b>Status view</b>  The screen shows the network being used, the time and other status information	Yes	Yes	Yes
<b>Stopwatch</b>	Yes	Yes	Yes
<b>Synchronization PC</b>  Synchronize phone content with a computer	Yes	Yes	Yes
<b>Talk time</b>	Up to 8 hours	Up to 7 hours	Up to 7 hours
<b>Tasks</b>  Keeps track of important things you have to do	Yes	Yes	Yes
<b>Themes</b>  Phone menu texts and background graphics	Yes	Yes	Yes
<b>Timer</b>  Set the phone to alert after a specific time	Yes	Yes	Yes

Feature	W380	Z310	W610
<b>TrackID™</b>  Obtain title, artist and album information about songs you hear	Yes	No	Yes
<b>USB connectivity support</b>  Connect the phone to a computer with a USB cable. The memory in the phone appears on the computer screen as a mass storage device	Yes	No	Yes
<b>Video player</b>  Play and transfer video clips to another phone or a computer using an available transfer method	Yes	No	Yes
<b>Video streaming</b>  Real time streaming of video, for example, live cam	No	No	Yes
<b>Vibrating alert</b>  The phone vibrates when a call comes in	Yes	Yes	Yes
<b>Viewfinder</b>  Use the camera to preview a picture before it is taken	Yes	Yes	Yes
<b>Voicemail</b>  Support for voicemail operator service including automatic answering and message recording	Yes	Yes	Yes
<b>Walkman® player 2.0</b>  Advanced digital music player	Yes	No	Yes
<b>Walkman® shortcut</b>  Get direct access to your music files without having to move between the menus. Press the key to gain direct access to the Walkman® player	Yes (navigation key up)	No	Yes (dedicated Walkman® key)
<b>WAP 2.0 XHTML</b>  A mobile Internet standard to access specially designed Web sites. WAP 2.0 supports colour and interactive lists	Yes	Yes	Yes
<b>Weight</b>	100 g	90 g	95 g

# Facts and figures

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This chapter offers readers a detailed listing of all the technical data relating to the product. Comprehensive descriptions of performance and technical characteristics are presented in table format for quick and easy access.

# Technical specifications

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## General technical data

System	Tri-band. a variant: GSM 850, GSM 1800, GSM 1900 c and i variant: EGSM 900, GSM 1800, GSM 1900
Speech coding	HR, FR, EFR, AMR FR, AMR HR supported where available, for high speech quality
GSM SIM/USIM card	Small plug-in card, 1.8 V and 3 V
Memory (user free)	Up to 14 MB
Data transfer speeds	Up to 238.4 Kbps (downlink) Up to 118.8 Kbps (uplink)

## Exterior description

Length	90 mm
Width	49 mm
Thickness	16 mm
Weight	100 grams
Internal Display	Type: Full graphical Size: 1.9 inches Resolution: 176x220 pixels Technology: TFT Colour LCD Colours displayed together: 262,000 Backlight colour: White
External Display	Type: Monochrome OLED Resolution: 128x36 pixels
Antenna	Built-in

## Battery information

3.6 V, 920 mAh, Lithium Polymer	Charging time: 90% charged after 2hours with standard charger.
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## Performance and technical characteristics

Property	GSM 850 (a variant)	EGSM 900 (i and c variant)	GSM 1800 (a, i and c variant)	GSM 1900 (a, i and c variant)
Frequency range (MHz)	TX: 824–849 RX: 869–894	TX: 880–915 RX: 925–960	TX: 1710–1785 RX: 1805–1880	TX:1850–1910 RX:1930–1990
Channel spacing	200 kHz	200 kHz	200 kHz	200 kHz
Number of channels	124 Carriers *x (TDMA)	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	GMSK	GMSK	GMSK	GMSK
TX Phase Accuracy	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	45 MHz	45 MHz	95 MHz	80 MHz
Frequency stability	+/- 0.1 ppm	+/- 0.1ppm	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V	3.6 V	3.6 V
Transmitter RF power output	32,5 dBm Class 4 (2 W peak)	33 dBm Class 4 (2 W peak)	29 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)
Transmitter Output impedance	50 ohm	50 ohm	50 ohm	50 ohm
Transmitter Spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than – 102 dBm	Better than – 102 dBm	– 102 dBm	– 102 dBm
Receiver RX Bit error rate	< 2.4%	< 2.4%	< 2.4%	< 2.4%

## USSD technical data

Feature	Support
USSD support	GSM Phase 1/2 (Cross-phase compatibility)
Mode support	UI-mode supported SAT initiated USSD supported
UI-mode details	<ul style="list-style-type: none"> <li>It is possible to scroll up and down in USSD messages.</li> <li>It is possible to highlight embedded numbers and take actions accordingly.</li> </ul>



## GPRS/EDGE technical data

Property	Support
Compatible GPRS and SMG specifications	Release 99 according to ETSI specification
Data rates GPRS (per time slot)	Coding scheme CS-1: 9 Kbps CS-2: 13,4 Kbps CS-3: 15,6 Kbps CS-4: 21,4 Kbps
Data rates EDGE (per time slot)	Modulation & coding scheme (MCS) MCS-1 (GMSK): 8,0 Kbps MCS-2 (GMSK): 11,4 Kbps MCS-3 (GMSK): 14,8 Kbps MCS-4 (GMSK): 17,6 Kbps MCS-5 (8-PSK): 22,4 Kbps MCS-6 (8-PSK): 29,6 Kbps MCS-7 (8-PSK): 44,8 Kbps MCS-8 (8-PSK): 54,4 Kbps MCS-9 (8-PSK): 59,2 Kbps
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0 and 2
Support of access in 2 phases	Yes
Support of PRACH on 11 bits	Yes
Support of GPRS re-selection C31/C32	Yes
Support of static and dynamic addressing	Yes
Support of power control Uplink and Downlink	Uplink = yes, Downlink is a network feature
Support of ciphering algorithms	GEA1, GEA2, GEA3
Support of compression algorithms	Yes, V42bis and IP header compression
Mode of operation	Class B and Class C modes of operation supported.
IP connectivity	PDP type IP is supported. IP termination in mobile or TE (laptop, PDA) supported
PDP context	10 PDP context descriptions stored in mobile. PDP context description is edited via application in mobile, AT-command or via OTA. Simultaneous PDP contexts are supported, maximum 4

Property	Support
SIM	GPRS aware, as well as non-GPRS aware; SIM cards are supported
AT commands	<p>Some of the supported commands:</p> <p>AT+CGDCONT - DEFINE PDP CONTEXT</p> <p>AT+CGEQREQ - Quality of Service Profile (REQUESTED)</p> <p>AT+CGEQMIN - Quality of Service Profile (Minimum Acceptable)</p> <p>AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH</p> <p>AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE</p> <p>AT+CGDATA - ENTER DATA STATE</p> <p>For more information, see <a href="http://www.sonyericsson.com/developer">www.sonyericsson.com/developer</a>.</p>

## SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		No
DATA DOWNLOAD TO SIM	Cell Broadcast SMS	Yes Yes
DISPLAY TEXT	Text of up to 240 characters (120 UCS2 coded).	Yes
	bit 1: 0 = normal priority	Yes
	1 = high priority	Yes
	bit 8: 0 = clear message after a delay	Yes
	1 = wait for user to clear message	Yes
GET INKEY	General: The GET_INKEY requires that the user confirms his/her choice	Yes
	bit 1: 0 = digits (0-9, *, # and +) only	Yes
	1 = alphabet set	Yes
	bit 2: 0 = SMS default alphabet	Yes
	1 = UCS2 alphabet	Yes
	bit 3: 0 = character sets defined by bit 1 and bit 2 are enabled	Yes
	1 = character sets defined by bit 1 and bit 2 are disabled and the Yes/No response is requested	Yes

Service	Mode	Support
GET INPUT	General: No. of hidden input characters	252
	bit 1:	0 = digits (0-9, *, # and +) only
		1 = alphabet set
	bit 2:	0 = SMS default alphabet
		1 = UCS2 alphabet
	bit 3:	0 = ME may echo user input on the display
		1 = user input not to be revealed in any way (see note)
	bit 4:	0 = user input to be in unpacked format
		1 = user input to be in SMS packed format
	bit 8:	0 = no help information available
		1 = help information available
LAUNCH BROWSER		Yes
MORE TIME		Yes
PLAY TONE		Yes
POLLING OFF		Yes
POLL INTERVAL		Yes
PROVIDE LOCAL INFORMATION	'00' = Location Information (MCC, MNC, LAC and Cell Identity)	Yes
	'01' = IMEI of the ME	Yes
	'02' = Network Measurement results	Yes
	'03' = Date, time and time zone (DTTinPLI)	Yes
	'04' - Language setting	Yes
	'05' - Timing setting	Yes
REFRESH	General: The reset option requests the user to wait while the phone restarts	Yes
	'00' =SIM Initialization and Full File Change Notification	Yes
	'01' = File Change Notification	Yes
	'02' = SIM Initialization and File Change Notification	Yes
	'03' = SIM Initialization	Yes
	'04' = SIM Reset	Yes

Service	Mode	Support
SELECT ITEM		Yes
SEND DTMF		Yes
SEND SHORT MESSAGE      bit 1:	0 = packing not required 1 = SMS packing by the ME required	Yes Yes
SEND SS		Yes
SEND USSD		Yes
SET UP CALL	General: Capability configuration Set-up speech call CallParty Subaddress DTMF support	Yes No Yes
	'00' = set up call, but only if not currently busy on another call	Yes
	'01' = set up call, but only if not currently busy on another call, with re-dial	Yes
	'02' = set up call, putting all other calls (if any) on hold	Yes
	'03' = set up call, putting all other calls (if any) on hold, with re-dial	Yes
	'04' = set up call, disconnecting all other calls (if any)	Yes
	'05' = set up call, disconnecting all other calls (if any), with re-dial	Yes
SET UP EVENT LIST	'00' = MT call	Yes
	'01' = Call connected	Yes
	'02' = Call disconnected	Yes
	'03' = Location status	Yes
	'04' = User activity	Yes
	'05' = Idle screen available	Yes
	'06' = Card reader status	Not Applicable
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	Yes
	'0A' = Channel status	Yes
SET UP IDLE MODE TEXT		Yes, 1 row of text is supported

Service	Mode	Support
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes
SEND DATA		Yes
GET CHANNEL STATUS		Yes

## User Interaction with SIM AT

### Display text

Text of up to 240 characters (120 UCS coded) is supported.

Text clearing times are 5-20 seconds and a 60-second time-out limit for the user to clear the text.

'Key' responses:

- 'Long Back' – Proactive session terminated by user.
  - 'Back' – Backward move in proactive session.
- Any other key clears the screen if the command is performed successfully.

### Get inkey

Prompt for a one-character input. Pressing 'Ok' without entering a character gives warning message "Minimum 1 character". 'Key' responses:

- 'C' clears current character.
- 'Long Back' terminates the proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

### Get input

Prompt for character input. The phone will refuse to accept further input when maximum response length is exceeded. UI Maximum Response lengths:

- Digits Only – 160 characters.
- SMS default alphabet characters – 160 characters.

- Hidden Characters (digits only) – 20 characters.

'Key' responses:

- 'C' clears current character.
- 'Long Back' terminates the proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

### Select item

Scroll to highlight item for selection. 'Key' responses:

- Navigational key press down – Scroll down list.
- Navigational key press up – Scroll up list.
- Long 'Back' terminates proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

### Send short message

Default message "Sending message, please wait" can be replaced for the Alpha Identifier text, or suppressed completely if a null text is provided. Default responses are "MESSAGE FAILED" or "MESSAGE SENT". 'Key' responses:

- Long 'Back' or 'Back' ends the proactive session.

### Set up call

If the ME is on a call when the command 'Set up Call', 'putting all other calls on hold' is sent, the user will see the text 'Setting up a call current call will be held'. If 'OK' is pressed the current call will be put on hold and the new call set up. If the ME is on a call when the command 'Set Up Call,

disconnecting all other calls' is sent, the user will see the text 'Setting up a call current call will be disconnected'. If the 'OK' key is pressed the current call will be disconnected and the new call set up.

### Set up menu

Incorporates a SIM Application Toolkit Menu Item into the ME's main menu structure.

If an Alpha Identifier is supplied in the Set Up Menu command, this is used as the SIM AT entry in the ME's main menu. If no alpha identifier is supplied and several items are found in the menu, a default title is used. If the SIM AT Menu Item is selected by pressing 'Select', all the items sent in the Set Up Menu command will be available for selection, in the same way as the Select Item command.

## Entertainment

### Walkman® player 2.0

File types	Formats	Extensions
Audio (All listed audio file formats are supported ringtone file formats)	AAC	.3gp, .mp4
	AAC+	.3gp, .mp4
	eAAC	.3gp, .mp4
	MP3	.mp3
	3GP	.3gp
	WAV	.wav
	m4a	.m4a
	MIDI	.mid
	AMR-WB	.amr, .3gp
	AMR-NB	.amr, .3gp

Feature	Support
Automatic pause on telephone call	Yes
Playlists	Yes
Play mode	Shuffle or Loop
Equalizer	Yes
Minimizing the Walkman® player	Yes

## Radio with RDS

System	VHF/FM
Output	Portable handsfree Internal loudspeaker External loudspeakers
Save channels	Yes, 20 presets
Antenna	Stereo portable handsfree

## Imaging/Messaging

### 1.3 megapixel camera

Facts and figures	
Picture sizes (resolution)	1280x1024 pixels 640x480 pixels 320x240 pixels
Colour depth	16 bit (8 bit per RGB channel) 262k colours
Camera memory	Using phone memory or memory card; no memory dedicated to the camera only
Digital zoom	Up to 4x zoom
Flash light	No
Auto focus	No
Night mode	Yes
Self-timer	Yes
Effects	Negative/Solarize/Sepia/Black&White/Off
Picture quality	Choose between Normal and Fine
Shoot Mode	Normal/Burst

### Pictures and animations

Formats	JPEG, BMP, GIF (including animated), PNG, WBMP and SWF
Sharing via	MMS, EMS, WAP, Bluetooth connection, email or cable

## Image decoders

Decoder	Details	Resolution	Colour depth	File format
GIF	87a/89a			
JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT	VGA		JFIF v1.02 EXIF
BMP	Bitmap image format	XRAM dependent, default is VGA	24 bit	
WBMP				
PNG				

## Image encoders

Decoder	Details	Resolution	Colour depth	File format
JPEG	ISO/IEC JPEG Baseline DCT	VGA		JFIF v1.02
BMP	Bitmap image format	XRAM dependent, default is VGA	24 bit	

## Video decoder

Decoder	Details	Resolution	Audio	File format
H.263	Profile 0, Level 10	s-QCIF, QCIF	AAC, AMR	.3gp

## Short Messaging Service

Feature	Support
SMS Service Centre Number	It is possible to pre-load the SMS Service Centre Number
Pictures	It is possible to insert a picture or an icon into the text message. EMS compliant mobile phones will be able to see the picture correctly
Reply to messages	It is possible to reply to received messages by SMS, MMS, voice message and email
Input methods:	Predictive writing and multitap
Copy and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes



Feature	Support
Possibilities when creating a message:	
Save a sent message in a "Sent items" folder	Yes
Insert a line in the message	Yes
Assign a validity period to the message	Yes
Use predefined messages	Yes
Possibilities when receiving a message:	
Reply to the sender	Yes
Forward the message	Yes
Save the message on the SIM card	Yes
Get delivery time and date	Yes
Possibilities of the previously sent message:	
Delivery report of the message	Yes (if requested when sending)
Forward the message	Yes
Save the message on SIM	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to the SIM card
Possibilities of the previously received message:	
Reply to the sender	Yes
Save the message in the inbox	Yes
Forward the message	Yes
Know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to the SIM card
Supported ways for replying to a received text message:	
Via SMS, MMS, voice message, email	Yes
Via phone call (set up a call to the number contained in the message body)	Yes
Via WAP call (go to the WAP address contained in the message body)	Yes
Via USSD session	No
Possibility to enable the user to send a text message to a list of recipients	Yes

Feature	Support
Possibility to write an email address as a recipient address	Yes, if email gateway is present
SMS storage	On the SIM card and in the phone
Nokia Picture Messaging	Yes

## Enhanced Messaging Service

Feature	Support
Level of compliance supported by the phone regarding the specifications described in release 99.	Enhanced Messaging Service (EMS) according to the standard 3GPP TS 23.040 v4.3.0, with the addition of the ODI feature from 3GPP TS 23.040 v5.0.0
Number of messages that the phone is able to handle to generate a concatenated message	10
Capacity storage	Up to 1000 and the space on the SIM card
Outgoing messages	<p>It is possible to...</p> <ul style="list-style-type: none"> <li>• See how many short messages an EMS message consists of before sending it.</li> <li>• Choose whether to send the message or not after writing it.</li> </ul>
Incoming messages	<ul style="list-style-type: none"> <li>• A signal is heard once all parts of the message have been received or when a time-out occurs.</li> <li>• It is possible to re-use the content of an EMS message. Sounds, pictures, and animations can be inserted in a new message, if the object is not protected using ODI.</li> </ul>
Delivery report for concatenated messages	Request a delivery report when sending the message. A receipt is received in the phone when all parts of a concatenated message have been delivered
Insert objects	It is possible to add pictures, animations and sounds to an EMS message
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low
I-melody	Yes, version 1.2
Melodies	It is possible to receive (always) and send melodies using EMS (if not copyright protected). It is also possible to download melodies and commercial tunes from WAP/ WAP portals.
Picture sizes	16x16, 32x32 pixels, variable size in black and white
Pictures	It is possible to receive and send using EMS (if not copyright protected)

Feature	Support
Animations	There is support for the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink, as defined in 3GPP TS 23.040 v4.3.0. It is possible to send and receive animations
TP-PID field value given by the phone before sending an EMS message	0x00

## Multimedia Messaging Service

Feature	Support
MMS parameters and MMS/GPRS parameters placement	MMS is bound to an MMS profile. An MMS profile is bound to an Internet profile. An Internet profile is bound to a Data Account
Possibility to pre-configure the MMS parameters in factory	MMS/GPRS: Yes
Possibility to configure the MMS parameters by OTA provisioning	MMS/GPRS: Yes
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	MMS/GPRS: Yes
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	MMS/GPRS: No
OTA provisioning solution	OTA Settings Specification v7.1 © Ericsson and Nokia and OMA provisioning
Supplier indication of realized interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes
Support of a standard or a proprietary procedure for OTA provisioning of MMS parameters	Proprietary and OMA provisioning
Functionalities that the user is able to set during message composition:	<ul style="list-style-type: none"> <li>• Message subject</li> <li>• Message priority</li> <li>• Email recipient address</li> <li>• Message Cc, Bcc recipient(s) address(es)</li> <li>• Delivery report request</li> <li>• Read report request</li> <li>• MSISDN recipient address</li> <li>• Delivery time</li> <li>• Validity period</li> </ul>

Feature	Support
From where can the user insert multimedia elements into multimedia messages:	<ul style="list-style-type: none"> <li>• File Manager</li> <li>• Directly from camera</li> <li>• Contacts</li> <li>• Calendar</li> <li>• Task</li> <li>• Note</li> <li>• Browser (vBookmark)</li> </ul>
Possibility for sent messages to be memorized into a folder in the phone memory	Yes
Actions that the user can perform after message retrieval:	<ul style="list-style-type: none"> <li>• Reply to the sender of the message SMS/MMS</li> <li>• Reply to the sender and to Cc, Bcc people SMS/MMS</li> <li>• Forward the message</li> <li>• Delete the message</li> <li>• Save message in a dedicated folder</li> <li>• Call the sender of a message</li> <li>• Save item</li> <li>• Mark as unread</li> <li>• Details</li> </ul>
Multimedia codecs/formats supported for audio	AAC, AAC+, eAAC, MP3, 3GP, AMR-NB, AMR-WB, WAV, MIDI and m4a
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, PNG, BMP
Supported formats for message presentation:	<ul style="list-style-type: none"> <li>• Message body + attachments (email presentation)</li> <li>• SMIL version as described in OMA MMS IOP document version 1.2</li> </ul>
Maximum message size that can be handled by the phone	Content Class and Creation mode are applied. Maximum size can also be customized.

## Email client technical data

Feature	Support
Bearer type GSM Data (IP)	Yes, ISDN and analog
Character sets	ISO: ISO-8859-1, ISO-8859-2, ISO-8859-5, ISO-8859-7, ISO-8859-9, ISO-8859-10 Windows: Windows-1251, Windows-1252, Windows-1254, Windows-1255, Windows-1258 US-ASCII Unicode: UTF-7, UTF-8, UTF-16 Japanese: Shift_JIS, ISO-2022-JP Cyrillic: KOI8-R Simplified Chinese: GB2312, GB18030 Traditional Chinese: Big5
OTA provisioning solution	Yes
Protocols	POP3 and IMAP4
Push email	IMAP Idle (extension of IMAP4Rev1), OMA Email Notification 1.0 and scheduled checking
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
Remote configuration	OMA Client Provisioning and Nokia Smart Messaging
HTML mail	Yes (tags removed)
Inline images	Yes
Message management	Window of 50 latest messages Headers only or size limits
ESMTP	Yes
Background sending	Yes

# Connectivity

## Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR).
Bluetooth profiles	Dial-up Networking Profile File Transfer Profile Generic Access Profile Generic Object Exchange Profile Handsfree Profile Headset Profile Object Push Profile Serial Port Profile Synchronization Profile Personal Area Networking Profile - Network Access Point (PAN-NAP) Advanced Audio Distribution Profile (A2DP)
Connectable devices	All products supporting Bluetooth spec. 1.1, or higher, and at least one of the profiles above.
Coverage area	Varies due to radio performance on remote device and the occurrence of obstacles. Up to 10 metres (33 feet).
Transmission power	Class 1, 4-20 dBm
Frequency band	2.4 GHz - the unlicensed ISM band
Power consumption	GSM host processor excluded: <ul style="list-style-type: none"> <li>Standby, Bluetooth On mode: &lt;0.6mA.</li> <li>Voice to headset (HV3 master): 11 mA (7 mA with EDR functionality, 2EV3 master). Dependent on various parameters, such as if the phone is master or slave.</li> <li>Data mode average: 27mA at 172.8 kbps symmetrical (DH1).</li> </ul>
Data transmission rate	Up to 600 Kbps asymmetric and up to 350 Kbps symmetric from an application level.

## OMA Data Synchronization (SyncML™) technical data

Feature	Support for SyncML
SyncML compliance	The phone is fully SyncML compliant, having passed SyncML Conformance testing. SyncML 1.2 is used by default and SyncML 1.1 is used depending on configuration and both are supported in Server-alerted synchronization
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent) Tasks: vCalendar 1.0 (vTodo) Notes: text/plain, Bookmarks:vBookmark 1.0
Possibility for operators to extend SyncML functionality	The device may be configured to include preset SyncML settings, and to control whether SyncML 1.1 or 1.2 will be used
Possibility to synchronize other phones using SyncML	No
Transport method for SyncML messages	HTTP, OBEX (USB, Bluetooth connection)
Synchronization application placement	Inside the phone
Possibility for the user to configure login parameters (for example, username and password) to access the remote database	Yes
Configuration parameters that can be entered/modified by the user.	Server URL, Username, User PWD, Paths to databases (Calendar, Contacts, Tasks, Notes and Bookmarks), UserID and PWD for Databases, Databases to be synchronized (on/off), Internet profile, Synchronization interval, Server ID and Server PWD, and permission to allow server-alerted synchronization. Can be provisioned with Ericsson Nokia OTA Settings Specification v7.1, OMA Client provisioning v1.1, and OMA Device Management 1.2
Mechanisms used by the phone to capture changes made by the end-user (how the SyncML client in the phone knows which changes were made to the address book)	It uses a change log where it marks the contact as updated
Ability to deal with multiple servers	Yes
Ability to perform conflict resolution actions	No

## Web browser data

Feature	Support in the browser
Back/forward to previous/next page	Yes
Bearer type GSM Data	Yes, packet switched
Bookmarks	Yes, with folders and sorting supported
Bookmark Export/Import	Yes, can be sent and received using vBookmark format via Bluetooth connection, SMS, MMS and email
Cache	Yes, 300 KB
Character sets *	UTF-8 (Default), UTF-16, USASCII, Latin1, UCS2.  *) When creating WML applications, it is recommended to always save the page contents as UTF-8, and that this is clearly indicated in the pages before publishing. This ensures that the contents of the application can be viewed, regardless of character sets used in gateways and the phone. All characters are not supported in all phones. The software version depends on which market the phone is associated to. Also, please note that the phone may not support input on a WAP Service which uses certain characters (languages), even if those characters are supported for browsing in the phone.
Clear cache	Yes
Home page	Yes, up to 10 different; one for each Internet profile
HTML version for WAP browser	XHTML, Mobile Profile 1.1 Full HTML is supported ECMA Script is supported DOM level 1 & 2 is supported WAP 2.0/WML 1.3
Hyperlinks in Text	Yes, highlighted as blue underlined text
Hyperlinks in Images	Yes, indicated by a frame
Image Animation	Yes
Image Formats	GIF (interlaced and non-interlaced) no transparent layers, JPEG, PNG
Network Settings	Up to 10 different settings available by selecting WAP profile (Internet, Banking, Gateway and so on)
OTA Support	Yes
PPP Authentication	PAP, CHAP supported
Reload page	Yes
Security	WTLS class 1-3 TLS version 1, Client authentication SSL version 3, Client authentication WIM on SIM ICC X.509 certificate support, WAP Profile WPKI OTA download of trusted certificates



Feature	Support in the browser
Tables	Yes
User Agent Profiles	Yes, list of client characteristics - for example, screen size
Internet profiles	Dynamic - up to 10 WAP profiles, each with its own settings

## Web browser and Operator technical data

Feature	Support for browser	
Web browser		
Version	2.0 baseline	
HTML	XHTML Mobile Profile	
Access NetFront 3.3	<ul style="list-style-type: none"><li>HTML 4.01, XHTML 1.1 Including mobile phone</li><li>CSS 1 &amp; CSS 2 (Partial)</li><li>ECMAScript 3rd edition (equal to Java script 1.5)</li><li>DOM level1, level2 and Dynamic HTML (Partial)</li><li>Graphic formats: GIF, Animated GIF, JPEG, progressive JPEG, PNG</li></ul>	
Provisioning		
Provisioning types	<b>The Ericsson-Nokia OTA solution</b>  Over the Air Settings Specification, v7.1 © Ericsson and Nokia	<b>OMA Client provisioning (v1.1)</b>
Total Parameter sets	<ul style="list-style-type: none"><li>10 (shared between the WAP provisioning types)</li><li>&lt; or = 10 (total number of WAP profiles)</li></ul>	
Parameter set list	name, homepage and homepage title (1st bookmark element), proxy/GW address, bookmarks (remaining bookmark elements), GPRS APN, protocol authentication, GW authentication, secure connection on/off	name, homepage,  proxy/GW address,  GPRS APN, protocol authentication, GW authentication, GPRS QoS
Parameter sets include	GPRS	
Factory pre-configuration	GPRS	
OTA	GPRS configuration possible	
Security mechanism		
Bearer	<b>The Ericsson-Nokia solution</b>	<b>OMA Client Provisioning</b>

Feature	Support for browser	
OTA via SMS	Operator verification through a code that can be included in the OTA configuration data. This code is shown to the user who can choose to install or not	Uses security mechanism (SEC) methods according to WAP-183-ProvCont-20010724-a (see <a href="http://www.openmobilealliance.org">www.openmobilealliance.org</a> )
Interface		
Bearer	The Ericsson-Nokia solution	OMA Client Provisioning
OTA via SMS	A question whether to install, with the code if available is asked. The user may have to choose whether to create a new WAP profile or to replace an existing WAP profile	For NETWPIN the user is asked to accept to install received settings. For USERPIN, USERNETWPIN and USERPINMAC the user is subsequently asked to enter a PIN code that is a shared secret between the service provider and the user
Re-provisioning Interface	The Ericsson-Nokia solution	OMA Client Provisioning
OTA via SMS	Same interface as above	If the settings previously installed were privileged or have higher priority, it might not be possible to install the settings again unless the terminal is reset, otherwise as above
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked	
SWIM	Not used for provisioning. The SWIM is only used for WAP security, both SSI/TLS connections and digital signatures	
SWIM certificate	Both client and trusted certificates can be used for WTLS connections and digital signatures	
Applicative provisioning		
Preferred bearer customization	Yes	
Email customization	Yes	
Other applications/features	Yes (MMS, SyncML, Wireless Village, OMA Device Management)	
Technologies		
OMA Client provisioning	Yes, WAP provisioning document v1.1	
Openwave OTA	No	
Other	Yes. The Ericsson-Nokia solution. OTA Settings Specification v7.1	
Provisioning bearer	SMS	
Parameter sets available	< or = 10 (total number of Internet profiles)	

Feature	Support for browser
Parameter sets for OTA modification	< or = 10 (total number of Internet profiles)
<b>PUSH</b>	
<b>Content types</b>	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	No
Session Initiation Application (SIA)	Yes
<b>Man Machine Interface</b>	
SI/content retrieval postponing	Yes
SI menu structure accessibility	Messaging, Inbox
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL. Messaging/Settings/Push/Allow push msg/Always ask
SIA reception warning	Yes
Cache size limitations	The oldest push in the inbox will be discarded
Number of push messages	The inbox holds 20 push messages independent of size. The maximum size for a push message is approximately 2KB
Push deactivate	Yes (Messaging/Settings/Push/Allow push msg)
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push
<b>Security</b>	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most reliable
Denial of service/spoofing	
<b>User agent profile</b>	
OA profile content size	
URL location	On the manufacturer Web site
<b>WTAI</b>	mailto: scheme smsto: scheme mmsto: scheme
WTA Make Call	Yes
WTA Send DTMF	Yes
WTA Add Phonebook	Yes

Feature	Support for browser
<b>DOWNLOAD</b>	
OMA download functionality	Yes
HTTP GET solution to download content	Yes
Other download content	Yes. No download limit when using HTTP protocol
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is informed where the content is saved and asked if it should be used at once or later
UAP indication for downloading	Yes
Other features	Yes. Store, delete, forward, use, manage
Object formats	Formats supported in the phone
<b>GRAPHICAL USER INTERFACE</b>	
<b>Man Machine Interface</b>	
Selection keys	Yes
Separate/dedicated back or erase keys	Yes
Display backlight on when browsing	Yes
Predictive writing	Yes
“http://” string displayed automatically when entering URLs	Not displayed but the “http://” is added automatically to the URL
<b>Elements</b>	
Pop-up menus	Yes, in XHTML
Radio buttons	Yes, in XHTML
Check boxes	Yes, in XHTML
Buttons	Available as XHTML form controls

# Java™

Feature	Functionalities
Java platform, Micro Edition (J2ME™)	<ul style="list-style-type: none"><li>• CLDC 1.1 (JSR 139)</li><li>• MIDP 2.0 (JSR 118)</li><li>• JSR 185 JTWI</li><li>• Wireless Messaging API (JSR 120/205)</li><li>• Java 3D Technology for the Wireless Industry (JSR 184) and Mascot Capsule Ver. 3</li><li>• PDA Optional Packages for J2ME™ Platform (JSR 75)</li><li>• Web Services (JSR 172)</li><li>• Mobile Media API (JSR 135 - Audio playback only).</li></ul>

# Abbreviations

## 3GPP

3rd Generation Partnership Project

## AAC

Advanced Audio Coding, a lossy audio coding scheme. AAC+ and eAAC is high efficiency audio coding.

## AMR

Adaptive Multi-Rate, a lossy coding scheme.

## API

Application Programming Interface

## DRM

Digital Rights Management. Controlling copying and distribution of contents, with respect to intellectual property rights.

## DTMF or Touch Tone

Dual Tone Multi-Frequency signal. Codes sent as tone signals. Used for telephone banking, accessing an answering machine and so on.

## e-GSM

Extended GSM. New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension provides increased network capability.

## EDR

Enhanced Data Rate

## EFR

Enhanced Full Rate, speech coding.

## EMS

Enhanced Messaging Service. Allows the user to add simple pixel pictures and animations, sounds and melodies to a text message. The EMS 3GPP standard also includes text formatting.

## ETSI

European Telecommunications Standards Institute

## FM

Frequency Modulation of the (radio) carrier wave.

## FR

Full Rate, speech coding.

## GIF

Graphics Interchange Format

## GPRS

General Packet Radio Services

## GSM

Global System for Mobile Communications. GSM is the world's most widely used digital mobile phone system, now operating in over 100 countries around the world, particularly in Europe and Asia-Pacific.

The GSM system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

## HR

Half Rate, speech coding.

## HTML

HyperText Markup Language

## **HTTP**

HyperText Transfer Protocol

## **JPEG**

Joint Photographer Expert Group

## **LED**

Light-Emitting Diode

## **MIDI**

Musical Instrument Digital Interface

## **ME**

Mobile Equipment

## **MMI**

Man-Machine Interface. See UI.

## **MP**

Megapixel

## **MP3**

Short for “MPEG-1 layer 3”, an effective audio coding scheme.

## **MT**

Mobile Termination

## **ODI**

Object Distribution Indicator

## **OLED**

Organic Light-Emitting Diode

## **OMA**

Open Mobile Alliance

## **OTA**

Over-The-Air Configuration. To provide settings for the phone by way of sending an SMS message over the network to the phone. This reduces the need for the user to configure the phone manually.

## **PDA**

Personal Digital Assistant

## **PDP**

Packet Data Protocol

## **PNG**

Portable Network Graphic

## **RDS**

Radio Data System

## **RSS**

Really Simple Syndication

## **SI**

Service Indication

## **SL**

Service Loading

## **SIM card**

Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile phone. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized, but both types have the same functions. The phone uses the small plug-in card.

## **SMS**

Short Messaging Service. Allows messages of up to 160 characters to be sent and received via the network operator’s message centre to a mobile phone.

## **SP-MIDI**

SP-MIDI stands for Scalable Polyphony MIDI.

## **SS**

Supplementary Services

## **SSL**

Secure Socket Layer

## **TLS**

Transport Layer Security

## **UI**

User interface

## **URL**

Uniform Resource Locator.  
The global address of documents and other resources on the World Wide Web.

## **USSD**

Unstructured Supplementary Services Data

## **vCard**

vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voicemail, Web browsers, telephony applications, call centres, conferences, PIMs /PDAs, pagers, fax, office equipment and smart cards. vCard is specified by IETF.

## **WAP**

Wireless Application Protocol. Handheld devices, low bandwidth, binary coded, a deck/card metaphor to specify a service. A card is typically a unit of interaction with the user, that is, either presentation of information or request for information from the user. A collection of WML cards is called a deck, which usually constitutes a service.

## **WAP service**

A WML application residing on a Web site.

## **WAV**

Waveform Audio File

## **WML**

Wireless Markup Language. A markup language used for authoring services, fulfilling the same purpose as HyperText Markup Language (HTML) does on the World Wide Web (WWW). In contrast to HTML, WML is designed to fit small handheld devices.

## **WMLScript**

Wireless Markup Language Script can be used to enhance the functionality of a service, just as, for example, Java Script may be utilized in HTML. It makes it possible to add procedural logic and computational functions to WAP-based services.

## **WWW**

World Wide Web

## **XHTML**

Extensible HyperText Markup Language



# Related information

## Documents

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- Sony Ericsson User guide
- Sony Ericsson FAQ
- AT Command Reference Manual
- WAP 2.0 Specifications

## Links

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- [www.sonyericsson.com/](http://www.sonyericsson.com/)
- [www.ericsson.com/mobilityworld/](http://www.ericsson.com/mobilityworld/)
- [www.midi.org](http://www.midi.org)
- [www.extendedsystems.com](http://www.extendedsystems.com)
- [www.gsmworld.com/](http://www.gsmworld.com/)
- [www.bluetooth.com](http://www.bluetooth.com)
- [www.imc.org](http://www.imc.org)
- [www.etsi.fr](http://www.etsi.fr)
- [www.openmobilealliance.org](http://www.openmobilealliance.org)
- [www.imc.org/pdi/](http://www.imc.org/pdi/)
- [www.w3.org/TR/xhtml-basic/](http://www.w3.org/TR/xhtml-basic/)
- [www.java.sun.com](http://www.java.sun.com)
- [www.memorystick.org/](http://www.memorystick.org/)
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